NASA TechTracS

Detailed Design Document

LeRC to GRC (Mod 76)

Prepared by Knowledge Sharing Systems, Inc.

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Introduction

This modification to NASA TechTracS was requested in a Work Request from Dianne Cheek of NASA Langley Research Center on May 14, 1999 and is designated as Mod76.

It consist of changes and additions to existing data structures and revisions to displays, reports and processes.

This detailed design document contains sufficient information to complete the software development construction for Mod76 and includes a detailed user interface mock-up. It also specifies the changes required to the user documentation and defines a quality assurance plan.

Overview - Table of Contents

Reuse Strategy

Since this development effort is primarily a series of modifications to an existing module in NASA TechTracS, extensive re-use of existing forms and reports will be made. The tools and objects currently in use in NASA TechTracS will be employed where appropriate. These include:

- Custom find methods
- Streamlined relate methods (Relate pop-up)
- Page navigation methods (More pop-up)
- Record navigation methods (Record pop-up)
- List Manager pop-up menus
- Full screen text edit windows
- People and Company autolinking (Business Card buttons)
- Keyword management module
- Auto Agent/Personal Agent batch processing
- Record maintenance audit (I button)
- Standard List window methods
- Standard Record window methods

Quality Assurance

In order to maintain high quality design and construction the following QA elements will be incorporated:

- All program code must adhere to defined standards, especially in the area of method, form and object naming conventions. The support website contains details of these in the "Coding and Structure Rules" link. More in depth programming standards are also on the support site via the "KSS 4D Programming Rules"

- All system interfaces must also adhere to NASA defined standards. The support website contains these "NASA TechTracS Interface Standards".

- All errors discovered during any formal testing will be recorded in the online Knowledge Sharing Systems Bug Reporting System. This will help ensure that errors are not identified more than once and that they are properly resolved.

- Unit Tests of discrete components will be performed by the developer. These components will be identified in the Detailed Development Plan. As far as is practicable, the goal of this testing is to prove that a given software component performs as designed before it is exposed to the larger environment of integration or system testing. For example, each method should be unit tested to verify proper use of passed parameters and, if appropriate, returned results. Developers will also verify that the components adhere to the Componet Checklists as part of the Unit Test. See the Component Reviews below for more details.

- Developers will perform source code tracing where appropriate to prove that the code executes as expected. Research has shown that regular use of source code tracing and unit testing will identify many errors early in the development cycle. Errors identified early are more easily and more cost-effectively resolved.

- Component Reviews will be conducted by an appointed reviewer(s) and reported to the developer. The Component Review Checklists will be used to ensure consistent review quality. Once a component has passed its review, it may participate in integration testing. Part of the review will include an analysis of the component by scanning TechTracS source with SanityCheck from Foresight Solutions. SanityCheck is an application that will perform a read-only scan of the 4th Dimension™ structure file. SanityCheck sifts through the structure file looking for common programming problems as well as checking the integrity of all objects (Forms, Methods, etc) within the structure file. The component

checklists are also available on the support site for the following links: " Construction Design Checklist", "Form Checklist", "Structure Checklist", and "Code Checklist".

- Integration Tests will be conducted to ensure that all new or modified components perform as expected when combined with other elements of NASA TechTracS. Due to the integrated nature of the TechTracS development process, extensive, detailed integration testing is inappropriate. However, sufficient testing should be performed to ensure compatibility with other components of the system.

- System Tests will be combined with testing of other modifications that are scheduled for the same release. A system test sequence will be developed to fully validate that the modifications have been properly implemented. After release, the system test sequence should be incorporated into regression test plans for future modifications.

User Manual

The User Manual is not applicable for Mod 76. The changes will take place at the code level and will not affect the functionality of NASA TechTracS.

Design Methodology

This module involves the creation of a new method to convert data from LeRC to GRC as well as modifications to existing tables, methods, forms, and variables. The NASA TechTracS conventions that apply to methods, variables, and constants will be utilized during the design and construction of the mod.

Design Status

11/02/99
Submitted for Technical Review. Corrections made

11/03/99
Submitted to Client (Dianne Cheek) for client Review.

Development and Operational Environment

Modifications to TechTracS are required to be compatible with the following processors and operating systems:

1. Intel Pentium - Windows 95, Windows 98, Windows NT 4
2. Motorola PowerPC - Mac OS 8.x

Requirements Matrix

The Requirements Matrix is a key map denoting what areas of development are necessary to fully satisfy the requirements. The "Req." column refers to the Requirement Number corresponding to that used in the Requirements Document for this mod. The remaining columns list the Structure, Record Form/Custom Dialog, List Form/Find Dialog, Custom Report and Major Method items created or modified to meet the specified requirement number. Details on these items can be found in the Detailed Development Plan section.

Requirements Matrix

Req.	Structure	Record Form	List Form	Report	Method
1	[LeRC Eval] [Technology]. LEW Eval Report	[LeRC Eval]. Input [LeRC Eval]. Simple Add [Process]. New WAN Job	[LeRC Eval]. Output	LeRC Evaluation	Mod76Conversion **Please refer to Excel spread-sheet for information concerning other modified methods.**
2					
3					
4					
5					

Detailed Development Plan - Table of Contents

Introduction

This Modification is a redesign of the existing TechTracS FY990300 module. The changes include modifications to existing tables and fields. Display forms are redesigned to accommodate the database changes.

Structure

In order to support the requirements of this modification, changes and additions to the existing NASA TechTracS database structure must be performed.

[LeRC Eval]

Structure Revision: Modification
Table Name: [LeRC Eval]
OkToAddRecords: Yes
OKtoDeleteRecs: Yes
HQ WAN: No
NTAS WAN: No
Description: [LeRC Eval] will be renamed [GRC Evaluation].

[Tech Program Office] Revisions

NONE

Relationship Summary

NONE

[Technology]

Structure Revision: Modification
Table Name: [Technology]
OkToAddRecords: Yes
OKtoDeleteRecs: Yes
HQ WAN: Yes
NTAS WAN: Yes
Description: [Technology]LEW Eval Report will be renamed [Technology]GRC Eval Report.

[Technology] Revisions

Req.	Field Name	Description	Type
1.1	LEW Eval Report	[Technology]LEW Eval Report will be renamed [Technology] GRC Eval Report	Boolean

Relationship Summary

NONE

Record Forms/Custom Dialogs

The following record forms (data input windows) and custom dialogs need to be added or modified as result of this mod.

[LeRC Eval]Input

Form Name: [LeRC Eval]Input
New or Modified: Modified **Menu Bar:** -2 **Description:** The title of the Input form will be modified from "LeRC Eval" to "GRC Evaluation".

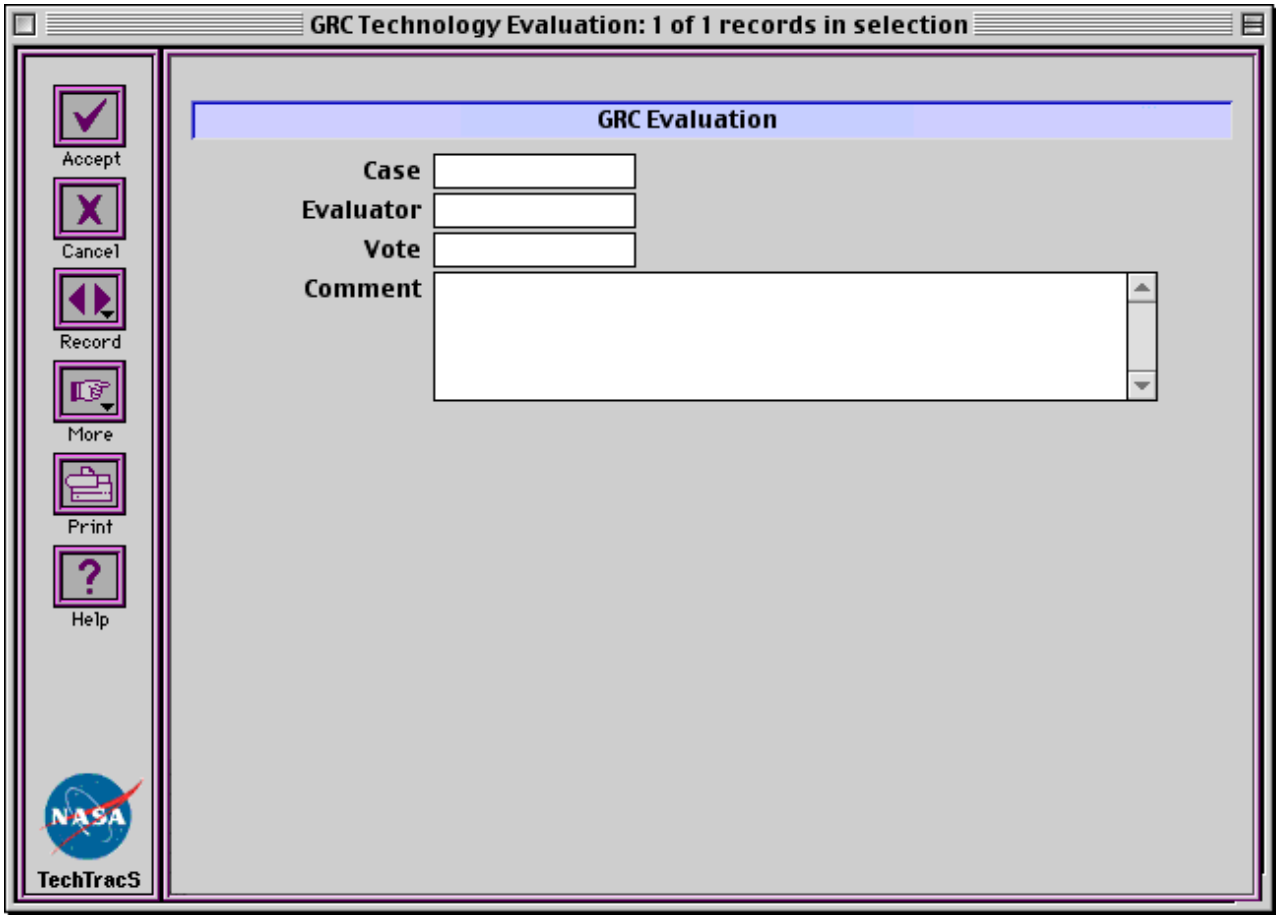
[LeRC Eval]Simple Add

Form Name: [LeRC Eval]Simple Add
New or Modified: Modified **Menu Bar:** -2 **Description:** The title of the Input form will be modified from "LeRC Evaluation" to "GRC Evaluation".

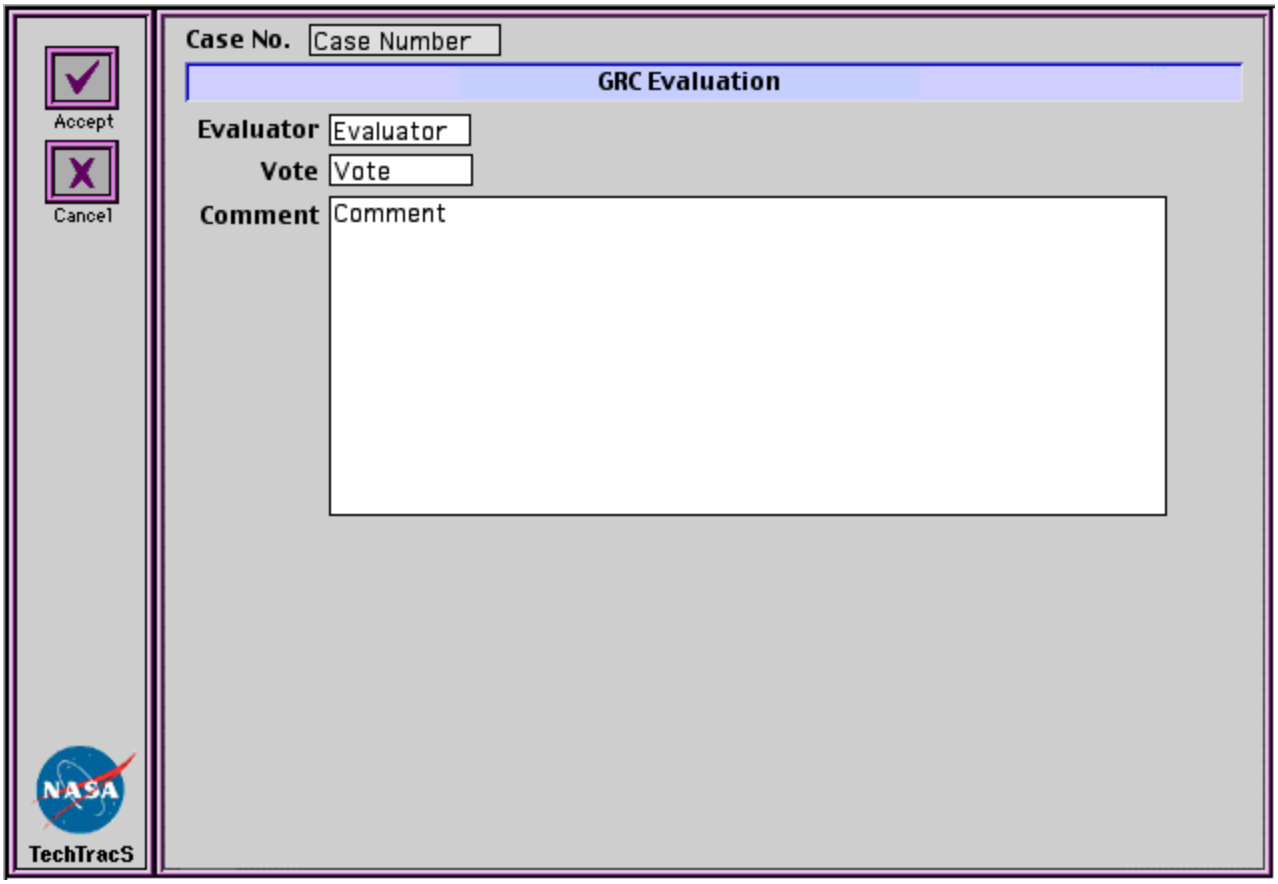
[Process]New WAN Job

Form Name: [Process]New WAN Job
New or Modified: Modified **Menu Bar:** -2 **Description:** The checkbox for LeRC will be changed from "Lewis Research Center" to "Glenn Research Center".

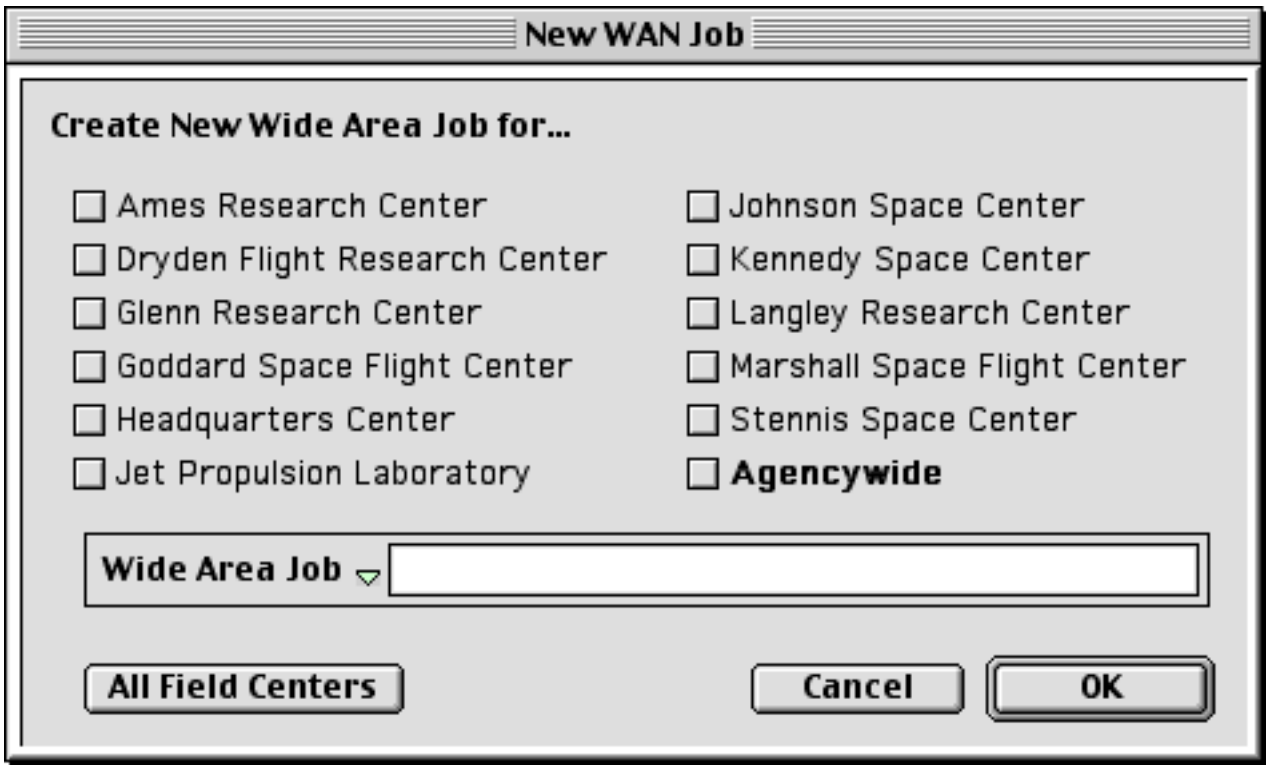
Mockup of [LeRC Eval]Input



Mockup of [LeRC Eval]Simple Add



Mockup of [Process]New WAN Job



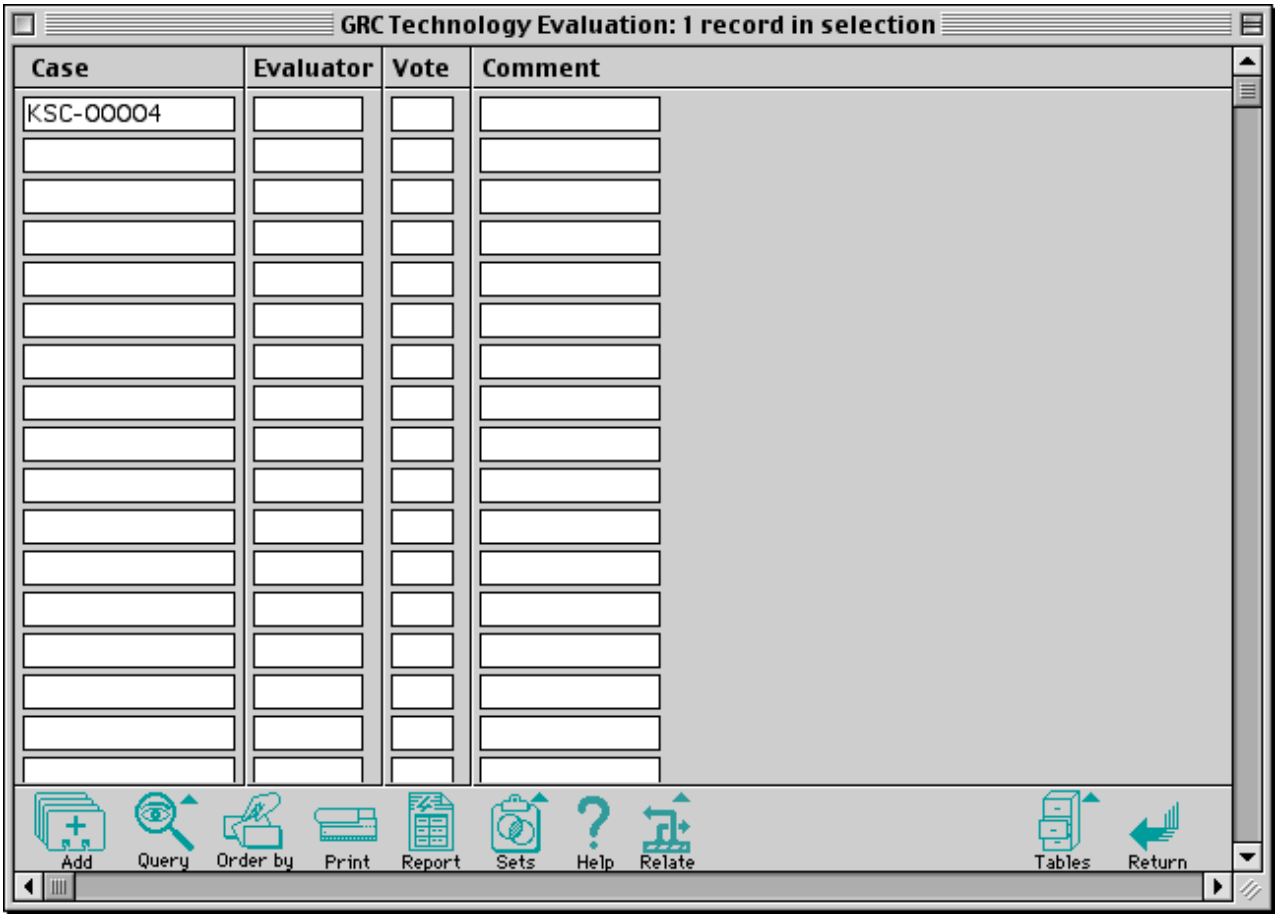
List Forms/Find Dialogs

The following List forms and Find dialogs need to be added or modified as result of this mod:

[LeRC Eval]Output

Form Name: [LeRC Eval]Output
New or Modified: Modified **Menu Bar:** -2 **Description:** The title of the Output form will be modified from "LeRC Eval" to "GRC Technology Evaluation".

Mockup of [LeRC Eval]Output



Custom Reports

The following custom reports need to be added or modified as result of this mod:

Report Name: LeRC Evaluation
New or Modified: Modified **Description:** The name of the report will change to GRC Evaluation.

Mockup of LeRC Evaluation

NONE

Major Methods

The following methods need to be added or modified as result of this mod:

Method Name:	**Mod76Conversion**
New or Modified:	New
User Method:	No
Requirement(s):	1
Description:	The Mod76Conversion method will be run once during deployment as a component of the FY000100 Conversion routine. The Mod76Conversion method will convert all fields and lists to reflect the name changes in Mod76. These changes are detailed in the Excel spreadsheet.

The Excel spreadsheet contains all of the method modifications as a result of Mod 76. Upon reviewing the methods to be updated, methods were discovered that are no longer used. These methods will be deleted or renamed as detailed in the spreadsheet.

Appendix

Estimated Hours

Req.	Design	Construction	Testing	Documentation	Tooling	Total
1.	60	40	56	8	0	164
2.	0	0	0	0	0	0
3.	0	0	0	0	0	0
4.	0	.15	0	0	0	.15
5.	8	8	4	0	0	20
Total Change	**0**	**0**	**+16**	**+8**	**0**	**+24**
New Totals	**68**	**48.15**	**60**	**8**	**0**	**184.15**